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ABSTRACT

Teacher efficacy is a critical variable in teacher and school effectiveness. The Teacher Efficacy Scale was used to assess teacher efficacy and investigate its relationship to teacher use of time, student time on task, and student achievement. Classroom observations were gathered from 14 teachers, grades 4-6, at two schools. Teacher allocation of time, student engagement, and student achievement were measured. Means and standard deviations and correlations among variables for teacher efficacy, teacher academic focus, student engagement rates and achievement were derived. Personal teaching efficacy (level of confidence in personal teaching abilities) correlated positively with reading achievement and whole class instruction and negatively with small group instruction. Teaching efficacy (general expectation of student success) correlated significantly with language and mathematics achievement. This study supports the contention that a teacher's sense of efficacy is significantly related to classroom grouping of students and to student achievement outcomes. (BAE)

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Effects of Efficacy on Academic Achievement

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A paper presented at the California Educational Research Association annual meeting in Marina del Rey, CA, November 13-14, 1986

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Teacher efficacy has been identified as a critical variable in the teacher effectiveness and school effectiveness literature. While there is strong support for its powerful effects, there is very little support as to how this important teacher attitude manifests itself in teacher behaviors or directly influences student achievement. The present study utilized the Teacher Efficacy Scale (Gibson & Dembo, 1984) to assess teacher efficacy and investigate its relationship to teacher use of time, student time on task and student achievement.

Methods

The Teacher Efficacy Scale was administered and classroom observations were gathered from 14 elementary teachers, Grades 4-6 at two school sites. Classroom observers were trained and reliability was established across observers. Each teacher and classroom was observed for a total of approximately nine hours.

The instruments used to obtain classroom process measures included a measure of teacher allocation of time adapted from Good & Brophy (1973) which yielded percentage of classroom time which was allocated to an academic focus (i.e., small group, whole class instruction, checking seatwork). Also utilized was a measure of student engagement rate (Hiscos, Braverman & Evans, 1982) which collected data related to the amount of time students spent on-task. Measures of student achievement were class mean standard scores on CTBS reading, math and language subtests.

Results

Means and Standard Deviations for Teacher Efficacy variables (Personal Teaching Efficacy, Teaching Efficacy), teacher academic focus variables (whole class, small group, monitering seat work) and student engagement rates are presented (See Table 1). Correlations among all variables are also presented

Table 1

Means and Standard Deviations for Achievement, Teacher Efficacy, Teacher Academic Focus, and Student Engagement Rate Variables.

Variable	Mean	Standard Deviation
1. Reading Achievement	717.64	26.46
2. Language Achievement	713.00	17.31
3. Math Achievement	710.57	14.27
4. Personal Teaching Efficacy	43.71	4.45
5. Teaching Efficacy	25.57	6.11
6. Teacher Academic Focus: Seatwork Rate	.18	.09
7. Teacher Academic Focus: Whole Class Rate	.20	.14
8. Teacher Academic Focus: Small Groups Rate	.16	.10
9. Student Engagement Rate	.61	.08

(See Table 2). As would be expected, strong-significant correlations exist between student engagement rate and achievement in Reading ($r = .49$, $p = .04$) and Language ($r = .59$, $p = .01$) are present. Of particular note is that the two factors of Personal Teaching Efficacy and Teaching Efficacy correlated very little with each other ($r = .22$, $p = .22$) and correlated very differently across the different achievement areas. Personal Teaching Efficacy (level of confidence in their personal teaching abilities) correlated significantly with reading achievement ($r = .55$, $p = .02$) while Teaching Efficacy (general expectation for student success) correlated significantly with language ($r = .49$, $p = .04$) and math achievement ($r = .62$, $p = .009$). It is also interesting to note that Personal Teaching Efficacy correlated positively and significantly with teacher use of whole class instruction ($r = .53$, $p = .03$) and correlated negatively with small group instruction ($r = -.52$, $p = .03$).

In this study low or near zero correlations are as informative as the significant correlations. The low positive correlation between Personal Teaching Efficacy and Teaching Efficacy supports Gibson & Dembo's contention that they are separate constructs. While student engagement rates correlate highly with student achievement they do not relate significantly to teacher academic focus or teacher efficacy variables.

Stepwise multiple regression analyses utilizing achievement scores as dependent measures indicated the variable of Personal Teaching Efficacy to account for a significant amount of the variance in reading achievement ($F = 5.13$, $df = 1, 12$, $p = .04$, $R^2 = .30$) and the variable of Teaching Efficacy to account for a significant amount of the variance in Math achievement ($F = 7.55$, $df = 1, 12$, $p = .02$, $R^2 = .37$). Student engagement rate accounted for a significant amount of the variance in Language achievement ($F = 6.43$, $df = 1, 12$, $p = .03$, $R^2 = .35$).

Table 2

Correlation Coefficients and Probabilities for Achievement, Teacher Efficacy, Teacher Academic Focus, and Student Engagement Rate Variables.

Variable	2	3	4	5	6	7	8	9
1. Reading Achievement	.90 (.001)	.69 (.003)	.55 (.02)	.35 (.11)	.03 (.46)	-.27 (.17)	.19 (.26)	.49 (.04)
2. Language Achievement	----	.84 (.001)	.42 (.07)	.49 (.04)	-.06 (.42)	-.01 (.49)	.05 (.43)	.59 (.01)
3. Math Achievement		----	.14 (.32)	.62 (.01)	-.31 (.14)	.31 (.14)	-.05 (.44)	.40 (.08)
4. Personal Teaching Efficacy			----	.22 (.22)	.53 (.03)	-.52 (.03)	.42 (.07)	.11 (.35)
5. Teaching Efficacy				----	-.31 (.14)	.17 (.28)	.09 (.38)	.24 (.20)
6. Teacher Academic Focus: Seatwork Rate					----	-.50 (.04)	-.16 (.30)	-.02 (.48)
7. Teacher Academic Focus: Whole Class Rate						----	-.14 (.32)	.17 (.29)
8. Teacher Academic Focus: Small Groups Rate							----	.08 (.41)
9. Student Engagement Rate								----

Summary and Conclusions

While mean achievement scores fell within a very limited range, the variability in individual student achievement in reading was considerably larger than in language or math. This is particularly interesting when one notes that the two subscales of the Teacher Efficacy Scale (personal teaching efficacy and teaching efficacy) correlate very differently across achievement areas. Preliminary research which suggested the relationship between teacher efficacy and student achievement looked at the construct of teacher efficacy in a very broad, global sense and did not investigate differential effects across particular content areas.

The Teacher Efficacy Scale includes two theoretically distinct subscales which differentiate a teacher's general belief that all students can learn regardless of SES, family background, etc. (Teaching Efficacy), and a teacher's belief that they possess the necessary teaching abilities to bring about student learning (Personal Teaching Efficacy). The present results suggest that these may have differential effects across different achievement areas. It may well be that the actual variability in student achievement may itself influence a teacher's sense of efficacy and sense of control. Teachers who have a high degree of confidence in their own teaching abilities appear to spend more time in whole class rather than small group instruction and yield higher achievement scores in the area of reading.

When teachers believe that good teaching can overcome other factors external to the teaching situation, this belief may manifest itself more directly in the area of mathematics instruction. A difference in beliefs regarding the importance of external factors across math and reading achievement may well reflect a commonly held belief by educators that a disadvantaged home environment results in a child being at a greater disadvantage in reading achievement than in math achievement.

Educational Importance

The present study lends further support to the contention that a teacher's sense of efficacy is significantly related to teacher classroom grouping of students and to student achievement outcomes. Furthermore, these effects may differ across achievement areas.

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